

REMARKS

Status of the Application

This amendment is submitted with a request for a one-month extension of time and the requisite fee.

Claims 1-43 were pending. The Office Action rejected claims 1-11 and 13-43, and objected to claim 12. By way of this amendment, claims 27, 30-35 and 38 are amended.

Allowable Subject Matter

Applicants acknowledge with appreciation the indication that dependent claim 12 would be allowable if rewritten in independent form.

PTO/SB/08 Form

The Office Action cited U.S. Patent Application Pub. No. 2004/0101034 (Ben-David), but this reference was not listed on the attached PTO-892 Form. In order to ensure that this reference appears on the face of any patent that issues from this application, Applicants submit herewith a PTO/SB/08 form listing this reference. Applicants respectfully request that the Examiner initial the PTO/SB/08 form and return a copy of the initialed form to Applicants. Alternatively, Applicants respectfully request that the Examiner issue a new or additional PTO-892 Form that includes the Ben-David reference.

Claim Amendments

Claim 27 was amended to additionally recite “generating transmit signals to be transmitted to user devices associated with said first class without using dirty paper techniques.” Claims 30-34 depend from claim 27 and have been amended to maintain consistency of claim terms in light of the amendment to claim 27. Applicants respectfully assert that the amendments to claims 30-34 are not narrowing.

Claim 35 was amended to recite that the transmit signal generator additionally is “to generate transmit signals to be transmitted to user devices associated with said first class without using dirty paper techniques.” Additionally, claim 35 was amended replace a

phrase “a second class” with the phrase “said second class.” Applicants respectfully assert that this amendment is not narrowing.

Claim 38 depends from claim 35 and has been amended to maintain consistency of claim terms in light of an amendment to claim 35. Applicants respectfully assert that the amendment to claim 38 is not narrowing.

Claim Objections

The Office Action objected to claims 1-40 and 43 apparently because they include the terms “use” and “using.”

Applicants respectfully submit that one of ordinary skill in the art would understand what is claimed by these claims, especially in light of the specification. *See M.P.E.P.* §2173.02. Accordingly, withdrawal of the objection is respectfully requested.

Rejection Under 35 U.S.C. §112

Claim 10 was rejected under 35 U.S.C. §112, second paragraph as allegedly being indefinite. In particular, the Office Action alleged that the language of claim 10 is unclear. Applicants respectfully traverse this assertion and the rejection.

Claim 10 is generally directed to a method for generating a transmit signal so that interference due to a common channel is mitigated. Claim 10 specifies that this method includes generating a common channel interference component. The common channel interference component is a component that “would be output by a receiver of said specific user device as a result of transmitting said first data (i.e., the data to be delivered via the common channel) from said transmitter into said common channel without using interference mitigation.” The specification discloses an embodiment of a common channel interference unit 22 of a transmitter that generates a common channel interference component. *See Present Application* at pars. 0019, 0020, Fig. 2. In this embodiment, the common channel interference component is generated based on the data to be transmitted on the common channel and information about the common channel (e.g., the common channel gains matrix G). The specification explains that this common channel interference component is the “interference that will occur at the output of the receiver of the [] user device assuming no

interference mitigation is used.” *Id.* at par. 0019. The specification also discloses an embodiment of a transmit signal generator 24 that uses the common channel interference component to generate a transmit signal that will result in reduced or cancelled interference. *See id.*

“The test for definiteness under 35 U.S.C. §112, second paragraph, is whether ‘those skilled in the art would understand what is claimed when the claim is read in light of the specification.’” *M.P.E.P.* §2173.02, citing *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576, 1 USPQ2d 1081, 1088 (Fed. Cir. 1986). Applicants respectfully submit that one of ordinary skill in the art would understand what is claimed by claim 10, especially in light of the specification. Accordingly, withdrawal of the rejection is respectfully requested.

Rejections Under 35 U.S.C. §102

Claims 1-3, 6, 7, 10, 11, 14, 22-24, 27 and 28 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Application Pub. No. 2004/0052236 (hereinafter “Hwang”). Claims 15, 16, 19, 20, 35, 36 and 41 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Application Pub. No. 2004/0028121 (hereinafter “Fitton”).

The present application generally relates to methods and apparatus, for use in a transmitter, to mitigate interference at a receiver. For example, claim 41 recites “generating a transmit signal for transmission to a remote user device via a dedicated channel that is pre-configured to cancel common channel interference within said remote user device upon reception.” On the other hand, Hwang and Fitton both describe interference mitigation techniques that are utilized at a receiver, not at a transmitter, and thus fail to disclose or suggest one or more of the elements of the claims.

With regard to claim 41, the Office Action alleged that Fitton discloses “generating a transmit signal for transmission to a remote user device via a dedicated channel that is pre-configured to cancel common channel interference within said remote user device upon reception” at paragraphs 0013, 0087 and 0091. But paragraphs 0087 and 0091 relate to operation of a receiver, not a transmitter, and paragraph 0013 does not disclose or suggest

“generating a transmit signal for transmission to a remote user device via a dedicated channel that is pre-configured to cancel common channel interference within said remote user device upon reception.” At least for these reasons, the Office Action failed to establish that Fitton anticipates claim 41.

With regard to claims 1 and 22, they recite, *inter alia*, “acquiring channel information for a common channel between a transmitter and said specific user device; and generating a transmit signal for said specific user device using said first data (i.e., data to be delivered to multiple user devices via the common channel), said second data (i.e., data to be delivered to a specific user device via a dedicated channel), and said channel information, said transmit signal to be transmitted from said transmitter to said specific user device.” The Office Action alleged that paragraph 0153 of Hwang discloses acquiring channel information for a common channel as recited in claims 1 and 22, and that paragraphs 0149 and 0150 of Hwang disclose generating a transmit signal using, *inter alia*, said channel information, as recited claims 1 and 22. But paragraph 0153 refers to a receiver, whereas paragraphs 0149 and 0150 refer to a transmitter. Although Hwang describes a receiver acquiring common channel information, it does not disclose or suggest generating a transmit signal using this common channel information. At least for these reasons, the Office Action failed to establish that Hwang anticipates claims 1 and 22.

With regard to claim 15, it recites “a common channel interference unit to determine a common channel interference component associated with a remote user device; and a transmit signal generator to generate a transmit signal to be transmitted to said remote user device via a dedicated channel, said transmit signal generator using said common channel interference component and dedicated data to generate said transmit signal.” The Office Action alleged that Fitton discloses the recited common channel interference unit at paragraph 0081, and discloses the recited transmit signal generator at paragraphs 0013 and 0091. But paragraphs 0081 and 0091 of Fitton are related to a receiver, and paragraph 0013 does not disclose or suggest a “a transmit signal generator to generate a transmit signal to be transmitted to said remote user device via a dedicated channel, said transmit signal generator using said common channel interference component and dedicated data to generate said

transmit signal.” At least for these reasons, the Office Action failed to establish that Fitton anticipates claim 15.

With regard to claim 27, it recites “obtaining first data to be delivered to user devices associated with a first class via corresponding dedicated channels; obtaining second data to be delivered to user devices associated with a second class via corresponding dedicated channels; acquiring channel information from user devices associated with said second class; and generating transmit signals to be transmitted to user devices associated with said second class using said first data, said second data, and said channel information.” The Office Action alleged that paragraph 0153 of Hwang discloses acquiring channel information from user devices associated with said second class as recited in claim 27, and that paragraphs 0149 and 0150 of Hwang disclose generating transmit signals to be transmitted to user devices associated with said second class using, *inter alia*, said channel information, as recited claim 28. But paragraph 0153 refers to a receiver, whereas paragraphs 0149 and 0150 refer to a transmitter. Although Hwang describes a receiver acquiring channel information, it does not disclose or suggest generating a transmit signal using this channel information. At least for these reasons, the Office Action failed to establish that Hwang anticipates claim 27.

At least for reasons similar to those discussed above with regard to claim 15, Applicants respectfully submit that the Office Action failed to establish a prima facie case of anticipation of claim 19.

At least for reasons similar to those discussed above with regard to claim 27, Applicants respectfully submit that the Office Action failed to establish a prima facie case of anticipation of claim 35.

Claims 2, 3, 6, 7, 10, 11 and 14 depend from claim 1. At least for the same reasons discussed above with respect to claim 1, Applicants respectfully submit that the Office Action failed to establish a prima facie case of anticipation of these claims.

Claim 16 depends from claim 15. At least for the same reasons discussed above with respect to claim 15, Applicants respectfully submit that the Office Action failed to establish a prima facie case of anticipation of claim 16.

Claim 20 depends from claim 19. At least for the same reasons as claim 19, Applicants respectfully submit that the Office Action failed to establish a prima facie case of anticipation of claim 20.

Claims 23 and 24 depend from claim 22. At least for the same reasons discussed above with respect to claim 22, Applicants respectfully submit that the Office Action failed to establish a prima facie case of anticipation of these claims.

Claim 28 depends from claim 27. At least for the same reasons as claim 27, Applicants respectfully submit that the Office Action failed to establish a prima facie case of anticipation of claim 28.

Claim 36 depends from claim 35. At least for the same reasons as claim 35, Applicants respectfully submit that the Office Action failed to establish a prima facie case of anticipation of claim 36.

Rejections Under 35 U.S.C. §103

Claims 4, 5, 31 and 32 were rejected under 35 U.S.C. §103 as being unpatentable over Hwang in view of Fitton. Claim 8 was rejected under 35 U.S.C. §103 as being unpatentable over Hwang in view of U.S. Patent Application Pub. No. 2006/0166690 (hereinafter “Nishio”). Claims 9, 25, 29 and 30 were rejected under 35 U.S.C. §103 as being unpatentable over Hwang in view of U.S. Patent Application Pub. No. 2003/0104808 (hereinafter “Foschini”). Claims 13, 26 and 34 were rejected under 35 U.S.C. §103 as being unpatentable over Hwang in view of U.S. Patent Application Pub. No. 2004/0030979 (hereinafter “Shany”). Claim 33 was rejected under 35 U.S.C. §103 as being unpatentable over Hwang in view of U.S. Patent Application Pub. No. 2004/0101034 (hereinafter “Ben-David”).

Claims 17, 37, 38 and 43 were rejected under 35 U.S.C. §103 as being unpatentable over Fitton in view of Foschini. Claims 18, 21, 39 and 42 were rejected under

35 U.S.C. §103 as being unpatentable over Fitton in view of Shany. Claim 40 was rejected under 35 U.S.C. §103 as being unpatentable over Fitton in view of Ben-David.

Applicants respectfully traverse these rejections.

Claims 4, 5, 31, 32: Rejected over Hwang in View of Fitton

Claims 4 and 5 depend from claim 1, and therefore recite “acquiring channel information for a common channel between a transmitter and said specific user device; and generating a transmit signal for said specific user device using said first data (i.e., data to be delivered to multiple user devices via the common channel), said second data (i.e., data to be delivered to a specific user device via a dedicated channel), and said channel information, said transmit signal to be transmitted from said transmitter to said specific user device.” The Office Action failed to establish that Hwang or Fitton discloses or suggests these elements, among others, either individually or in combination.

Claims 31 and 32 depend from 27 and therefore recite “obtaining first data to be delivered to user devices associated with a first class via corresponding dedicated channels; obtaining second data to be delivered to user devices associated with a second class via corresponding dedicated channels; acquiring channel information from user devices associated with said second class; and generating transmit signals to be transmitted to user devices associated with said second class using said first data, said second data, and said channel information.” The Office Action failed to establish that Hwang or Fitton discloses or suggests these elements, among others, either individually or in combination.

Claim 8: Rejected over Hwang in View of Nishio

The Office Action cited Nishio as allegedly disclosing the use of a paging signal. Claim 8 depends from claim 1, and therefore recites “acquiring channel information for a common channel between a transmitter and said specific user device; and generating a transmit signal for said specific user device using said first data (i.e., data to be delivered to multiple user devices via the common channel), said second data (i.e., data to be delivered to a specific user device via a dedicated channel), and said channel information, said transmit signal to be transmitted from said transmitter to said specific user device.” The Office Action

failed to establish that Hwang or Nishio discloses or suggests these elements, among others, either individually or in combination.

Claims 9, 25, 29, 30: Rejected over Hwang in View of Foschini

Claim 9 depends from claim 1 and claim 25 depends from claim 22.

Therefore, claims 9 and 25 recite “acquiring channel information for a common channel between a transmitter and said specific user device; and generating a transmit signal for said specific user device using said first data (i.e., data to be delivered to multiple user devices via the common channel), said second data (i.e., data to be delivered to a specific user device via a dedicated channel), and said channel information, said transmit signal to be transmitted from said transmitter to said specific user device.” The Office Action failed to establish that Hwang or Foschini discloses or suggests these elements, among others, either individually or in combination.

Foschini describes using “dirty paper coding” to mitigate interference due to dedicated channels. But Foschini does not disclose or suggest using this “dirty paper coding” in connection with a common channel. As a result, the Office Action failed to establish that the alleged combination of Hwang and Foschini discloses or suggests “acquiring channel information for a common channel between a transmitter and said specific user device; and generating a transmit signal for said specific user device using said first data (i.e., data to be delivered to multiple user devices via the common channel), said second data (i.e., data to be delivered to a specific user device via a dedicated channel), and said channel information, said transmit signal to be transmitted from said transmitter to said specific user device.”

Claims 29 and 30 depend from claim 27 and therefore recite “obtaining first data to be delivered to user devices associated with a first class via corresponding dedicated channels; obtaining second data to be delivered to user devices associated with a second class via corresponding dedicated channels; acquiring channel information from user devices associated with said second class; generating transmit signals to be transmitted to user devices associated with said first class without using dirty paper techniques; and generating transmit signals to be transmitted to user devices associated with said second class using said first data, said second data, and said channel information.” The Office Action failed to

establish that Hwang or Foschini discloses or suggests these elements, among others, either individually or in combination.

Foschini describes using “dirty paper coding.” But Foschini does not disclose or suggest generating different transmit signals for different classes of user devices. Therefore, Foschini cannot disclose or suggest “generating transmit signals to be transmitted to user devices associated with said first class without using dirty paper techniques; and generating transmit signals to be transmitted to user devices associated with said second class using said first data, said second data, and said channel information.”

Claims 13, 26, 34: Rejected over Hwang in View of Shany

Claim 13 depends from claim 1 and claim 26 depends from claim 22. Therefore, claims 13 and 26 recite “acquiring channel information for a common channel between a transmitter and said specific user device; and generating a transmit signal for said specific user device using said first data (i.e., data to be delivered to multiple user devices via the common channel), said second data (i.e., data to be delivered to a specific user device via a dedicated channel), and said channel information, said transmit signal to be transmitted from said transmitter to said specific user device.” The Office Action failed to establish that Hwang or Shany discloses or suggests these elements, among others, either individually or in combination.

Claim 34 depends from claim 27 and therefore recites “obtaining first data to be delivered to user devices associated with a first class via corresponding dedicated channels; obtaining second data to be delivered to user devices associated with a second class via corresponding dedicated channels; acquiring channel information from user devices associated with said second class; and generating transmit signals to be transmitted to user devices associated with said second class using said first data, said second data, and said channel information.” The Office Action failed to establish that Hwang or Shany discloses or suggests these elements, among others, either individually or in combination.

Claim 33: Rejected over Hwang in View of Ben-David

Claim 33 depends from claim 27 and therefore recites “obtaining first data to be delivered to user devices associated with a first class via corresponding dedicated channels; obtaining second data to be delivered to user devices associated with a second class via corresponding dedicated channels; acquiring channel information from user devices associated with said second class; generating transmit signals to be transmitted to user devices associated with said first class without using dirty paper techniques; and generating transmit signals to be transmitted to user devices associated with said second class using said first data, said second data, and said channel information.” The Office Action failed to establish that Hwang or Ben-David discloses or suggests these elements, among others, either individually or in combination.

Claims 17, 37, 38 43: Rejected over Fitton in View of Foschini

Claim 17 depends from claim 15 and therefore recites “a common channel interference unit to determine a common channel interference component associated with a remote user device; and a transmit signal generator to generate a transmit signal to be transmitted to said remote user device via a dedicated channel, said transmit signal generator using said common channel interference component and dedicated data to generate said transmit signal.” The Office Action failed to establish that Fitton or Foschini discloses or suggests these elements, among others, either individually or in combination. For example, the Office Action failed to establish that Fitton or Foschini discloses or suggests generating a transmit signal using a common channel interference component.

Claims 37 and 38 depend from claim 35 and therefore recite “an interference unit to collect data to be delivered to user devices within a first class via corresponding dedicated channels and to use the collected data to generate a composite interference signal; and a transmit signal generator to generate transmit signals to be transmitted to user devices associated with said first class without using dirty paper techniques, and to generate transmit signals to be transmitted to user devices within said second class via corresponding dedicated channels using said composite interference signal, dedicated data to be delivered to said user devices within said second class, and channel information associated with said user devices within said second class. Neither Fitton nor Foschini discloses or suggests generating

different transmit signals for different classes of user devices. Thus, at least for this reason, the Office Action failed to establish that Fitton or Foschini discloses or suggests all of the elements of claims 37 and 38 either individually or in combination.

Claim 43 depends from claim 41 and therefore recites “generating a transmit signal for transmission to a remote user device via a dedicated channel that is pre-configured to cancel common channel interference within said remote user device upon reception.” Neither Fitton nor Foschini discloses or suggests this element, among others. At least for this reason, the Office Action failed to establish that Fitton or Foschini discloses or suggests all of the elements of claim 43, either individually or in combination.

Claims 18, 21, 39, 42: Rejected over Fitton in View of Shany

Claim 18 depends from claim 15 and therefore recites “a common channel interference unit to determine a common channel interference component associated with a remote user device; and a transmit signal generator to generate a transmit signal to be transmitted to said remote user device via a dedicated channel, said transmit signal generator using said common channel interference component and dedicated data to generate said transmit signal.” The Office Action failed to establish that Fitton or Shany discloses or suggests these elements, among others, either individually or in combination. For example, the Office Action failed to establish that Fitton or Shany discloses or suggests generating a transmit signal using a common channel interference component.

Claim 21 depends from claim 19 and therefore recites “a common channel interference unit to determine a common channel interference component associated with a remote user device; and a transmit signal generator to generate a transmit signal to be transmitted to said remote user device via a dedicated channel, said transmit signal generator using said common channel interference component and dedicated data to generate said transmit signal.” The Office Action failed to establish that Fitton or Shany discloses or suggests these elements, among others, either individually or in combination.

Claim 39 depends from claim 35 and therefore recites “an interference unit to collect data to be delivered to user devices within a first class via corresponding dedicated channels and to use the collected data to generate a composite interference signal; and a

transmit signal generator to generate transmit signals to be transmitted to user devices associated with said first class without using dirty paper techniques, and to generate transmit signals to be transmitted to user devices within said second class via corresponding dedicated channels using said composite interference signal, dedicated data to be delivered to said user devices within said second class, and channel information associated with said user devices within said second class. Neither Fitton nor Shany disclose or suggest generating different transmit signals for different classes of user devices. Thus, at least for this reason, the Office Action failed to establish that Fitton or Shany discloses or suggests all of the elements of claim 39 either individually or in combination.

Claim 42 depends from claim 41 and therefore recites “generating a transmit signal for transmission to a remote user device via a dedicated channel that is pre-configured to cancel common channel interference within said remote user device upon reception.” Neither Fitton nor Shany disclose or suggest this element, among others. At least for this reason, the Office Action failed to establish that Fitton or Shany discloses or suggests all of the elements of claim 42, either individually or in combination.

Claim 40: Rejected over Fitton in View of Ben-David

Claim 40 depends from claim 35 and therefore recites “an interference unit to collect data to be delivered to user devices within a first class via corresponding dedicated channels and to use the collected data to generate a composite interference signal; and a transmit signal generator to generate transmit signals to be transmitted to user devices associated with said first class without using dirty paper techniques, and to generate transmit signals to be transmitted to user devices within said second class via corresponding dedicated channels using said composite interference signal, dedicated data to be delivered to said user devices within said second class, and channel information associated with said user devices within said second class. Neither Fitton nor Ben-David disclose or suggest generating different transmit signals for different classes of user devices. Thus, at least for this reason, the Office Action failed to establish that Fitton or Shany discloses or suggests all of the elements of claim 40 either individually or in combination.

Conclusion

In view of the above, Applicants believe the pending application is in condition for allowance.

Dated: June 20, 2007

Respectfully submitted,

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